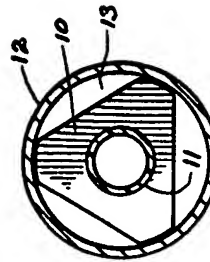
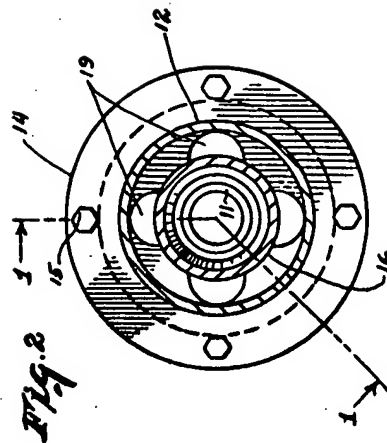
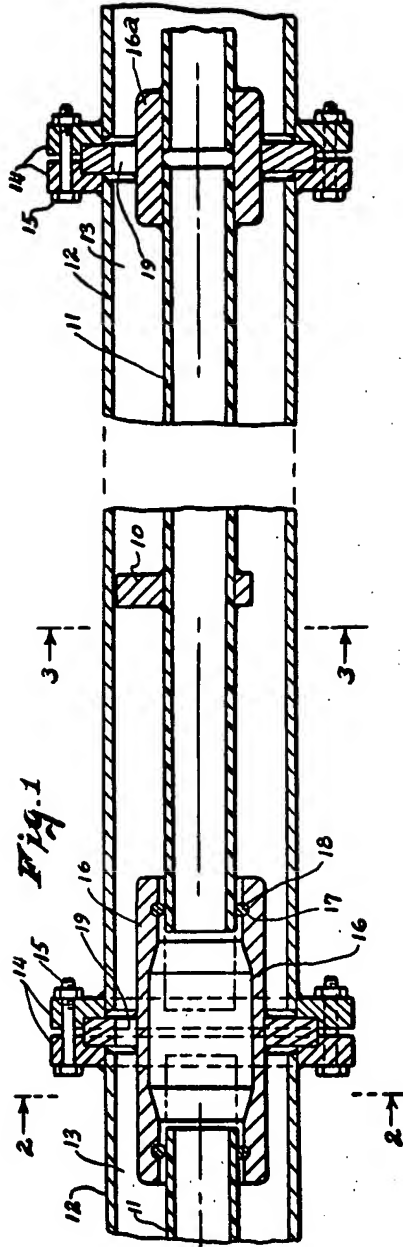


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PLASTIC PIPE LINES

Theodor Leupp, Domat-Ems, Switzerland

Granted to INVENTA A. G. für Forschung und Patentverwertung, Zürich, Switzerland

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No. OF CLAIMS 2

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The invention relates to plastic pipe lines and their manufacture and, more particularly, to plastic pipe lines which are heatable.

As is known, the tendency prevails to replace the customary metal pipes and pipe lines with those made of plastics, as far as this is compatible with the latter's capabilities of withstanding the influence of liquids. Difficulties are encountered especially when plastic pipes are employed which must be heated since the heat expansion of the plastics, as a rule, is considerably greater than that of metals used as jacket tubes and, further, because such auxiliary appliances as stuffing boxes, swivels or corrugated tubes, used with metal, are not easily fabricated from plastics.

It now has been found that pipe lines made of plastics can be provided with heating jackets of metal and thus can be heated, by fastening plastic pipe lines consisting of tube or pipe sections in outer pipes of metal in such a manner that the inner tubes are longitudinally extensible.

The object of the invention thus is a heated plastic pipe line, consisting of a metal jacket and plastic pipes, wherein the plastic pipe line and the metal jacket are subdivided into sections, whereby the sections of the jacket are connected by flanges and the converging ends of the plastic pipe sections are fastened coaxially between the flanges of the heating jacket in part by sleeves and flanges, fixed with regard to the plastic pipe sections, and in part by dilating sleeves and flanges.

A preferred embodiment of the invention will now be explained with reference to the accompanying drawing, but it should be understood that this is given merely by way of illustration, not of limitation, and that numerous changes may be made in the

details without departing from the spirit and the scope of the invention as hereinafter claimed.

In the drawings,

Fig. 1 is a longitudinal section through a plastic pipe line with metal heating jacket, taken on lines 1 - 1 of Fig. 2;

Fig. 2 is a section along the lines 2 - 2 of Fig. 1;

Fig. 3 is a section along the lines 3 - 3 of Fig. 1.

Referring now to these drawings, the plastic pipe sections 11 in Fig. 1 are surrounded by metal pipe sections 12 in such a manner that between the two pipes an equidistant circular space 13 is formed, through which the heating medium flows. The metal sections are held together at their connecting points, by flanges 14 whereby, through metal flanges 14, by means of flanges 15, fastened to metal sleeves 16 and 16a, the plastic pipe sections 11 are held together coaxially to the jacket tubes. Within the connecting sleeves 16 and 16a the plastic pipe sections alternately are disposed slideably and rigidly. Connecting sleeve 16, wherein the plastic pipe section is set slideably, has internal notches 17 near the ends, in which gaskets 18 are disposed having a round or oval cross section. This arrangement facilitates a liquid-tight expansion of pipe sections 11 within sleeve 16 and also liquid tight contraction. In contrast thereto, connecting sleeve 16a is rigidly connected with pipe section 11 so that the plastic pipe sections 11 are rigidly connected at that place with respect to the jacket pipe sections 12. The flanges 15, at the points of dilation as well as at the fixed points, are welded to the connecting sleeves and are provided with passages 19 for the heating medium, as is shown in Fig. 2.

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Between the fixed points and the points of dilation one or several supports 10 may be disposed, depending upon the length of the plastic pipe sections, which hold these sections in their position with respect to the heating jacket 12. Fig. 3 shows that these supports also provide for the passage of the heating medium.

It is obvious that the heated plastic pipe line also may curve when required. Within the curvatures, points of dilation are not required, merely fixed points since the radius of curvature must be chosen in any event in accordance with the properties of the plastic employed, so that the plastic pipe has ample room for shifting within the curvature of the outer pipe.

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THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE
PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

I claim as my invention:

1. A heatable plastic pipe line assembly, comprising, in combination, a plurality of plastic pipe sections, disposed coaxially and concentrically in a plurality of outer metal pipe sections, thus forming a circular space for the passage of a heating medium, a sleeve for joining two of said plastic pipe sections rigidly, alternating with a sleeve joining two of said pipe sections dilatantly, a plurality of gaskets disposed in notches near the end of said sleeves for joining said pipe sections dilatantly, thereby providing a liquid-tight seal, a first flange for joining said metal pipe sections, a second flange disposed on said first flange and connecting the same with said sleeves, thus providing said concentric position of said plastic pipe sections, and passages for the heating medium through said second flanges.

2. The pipe line assembly as defined in claim 1, wherein spacers are provided between said plastic and said metal pipe sections to further maintain the concentric position, said spacers having openings for the passage of the heating medium.

H. Edward Mestern, 565 Fifth Avenue, New York 17, N.Y.
and Fetherstonhaugh & Co., 70 Gloucester Street, Ottawa 4, Canada

Patent Agents of the Applicant